

with the Authors best wishes

INAUGURAL DISSERTATION

ON

THE PATHOLOGY

OF THE

LARYNGISMUS STRIDULUS.

SUBMITTED TO

The Medical Faculty of the University
of Edinburgh,

IN CONFORMITY WITH THE RULES FOR GRADUATION,

BY AUTHORITY OF

THE VERY REVEREND PRINCIPAL BAIRD,

AND WITH THE SANCTION OF

THE SENATUS ACADEMICUS.

BY

ANDREW JAMES SCOTT,

CANDIDATE FOR THE

DEGREE OF DOCTOR IN MEDICINE.

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TO

JOHN SCOTT, M.D. F.R.C.S.E.

SURGEON EXTRAORDINARY TO THE QUEEN FOR SCOTLAND,

THIS ESSAY

IS RESPECTFULLY INSCRIBED,

BY HIS

FRIEND AND PUPIL,

THE AUTHOR,

AS A SMALL TOKEN OF GRATITUDE FOR THE KIND ASSISTANCE

RENDERED TO HIM IN THE COURSE OF HIS

PROFESSIONAL STUDIES.

TO

ROBERT CHRISTISON, M.D. F.R.S.E.

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS,

PROFESSOR OF MATERIA MEDICA IN THE UNIVERSITY OF EDINBURGH, ETC.

THE FOLLOWING PAGES

ARE RESPECTFULLY DEDICATED,

IN GRATEFUL ACKNOWLEDGMENT OF HIS VALUABLE INSTRUCTIONS

AND KIND ATTENTION,

BY HIS

FRIEND AND PUPIL,

THE AUTHOR.

ON
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OF THE
LARYNGISMUS STRIDULUS.

THIS disease, though not altogether unknown to many of the old medical writers, appears not to have attracted much of their attention, and has evidently been very frequently confounded by them with other affections of the respiratory organs. Dr John Clark, in his Commentaries on the Diseases of Children,* brought it more fully under the cognizance of the profession. This author appears to have been among the first to recognize it as a distinct disease, and to attempt an exposition of its nature and pathology. It has, however, been noticed, both before

* P. 86.

his time and since, by various writers, under a number of different appellations, most of them calculated to give a very erroneous idea of its nature. It has been denominated, for example, "morbus strangulatorius," * "asthma suffocativum," † "a peculiar species of convulsion in infant children," ‡ "cerebral croup," § "spasm of the glottis," || "thymic asthma." ¶ But these are a small part of the great variety of titles under which it is treated of by authors. Laryngismus Stridulus, which term was first given to it by Dr Mason Good, is the one we have adopted in preference to others, and it appears to be the least objectionable. In the following pages, we intend more particularly to turn our attention to the consideration of its Pathology, and to an examination of the different theories which have been brought forward in explanation of the phenomena it presents. But before doing so, it may be proper, in the first instance, to allude shortly to the more prominent symptoms and diagnostic signs by which it may be distinguished from croup and other diseases allied to it in appearance, although very different from it in reality.

Dr Hugh Ley,** the latest and best authority,

* Starr.

† Burns. Hamilton.

‡ Clark.

§ Pretty.

|| Marsh.

¶ Koppe, Montgomery, Hood, &c.

** Ley on the Laryngismus Stridulus, p. 10.

gives a description of the disease in the following words :—" Sudden attacks of breathlessness from partial or total obstruction to the admission of air into the windpipe, varying according to the degree of the closing of the glottis, and commonly succeeded, or at all events attended, by a sonorous inspiration. Where the closure of the chink is not perfect, the child struggles for breath. The respiration is hurried, the countenance generally blueish, the eyes staring, and each inspiration is attended by a crowing noise. Where it is more complete, and this state at the commencement of the paroxysm according to my observation is much more frequent, the function of respiration is entirely suspended for a while ; there is an effectual obstruction to the admission of air ; the child makes vehement struggles, by some termed convulsive, to recover its breath, at varied intervals, from a few seconds up to a minute, or upon some occasion, nearly two minutes. Air is at length admitted through the glottis, now partially open, and this rush of air, passing through a very narrow chink, produces the peculiar sound. To these symptoms not unfrequently succeed a fit of coughing or crying, which terminates the scene ; or if the glottis be not even thus partially open, the child, at the end of two or three minutes at the utmost, will die of asphyxia ; pallid and

exhausted, it falls lifeless on the nurse's arm, and it is then that the child is generally said to have died in a fit."

The suddenness of the attack, the absence of cough, pain, and other indications of inflammation, but more particularly the absence of any traces of inflammation on examination after death, sufficiently distinguish it from the true croup. Pertussis is the disease which most nearly resembles laryngismus; and the resemblance is so striking, that Dr Ley mentions an eminent physician, with whom he was in consultation, having mistaken the one for the other.* The principal diagnostic signs between the two diseases, according to the best authorities,† are the following:—Pertussis is contagious, laryngismus is not. Pertussis comes on gradually, while, on the contrary, laryngismus comes on without the slightest warning. Pertussis runs through a regular course, and is seldom interrupted in its course, which very often continues for three or four months. Laryngismus, on the other hand, frequently subsides, and again recurs with increased violence. From bronchitis, and the suffocative catarrh of Laennec, it may be distinguished by the absence of pain, and the peculiar wheezing sound easily to be recognized in these affections.

* Ley, p. 162.

† Ibid. p. 162. Ryland on Diseases of the Larynx, p. 133.

All writers upon this disease appear to be agreed on one point with regard to its pathology; viz. that it is dependent upon some derangement in the action of the muscles of the glottis, causing closure more or less of the rima glottidis, and thus preventing the admission of air to the lungs. But a great difference of opinion exists concerning the nature and cause of this deranged action; one contending, that it is a spasm of the glottis induced by previously existing cerebral disease;* while another is of opinion, that although it is a spasm of the glottis, it is unconnected with any general spasmodic affection, and that the brain only becomes implicated after the disease has existed for a considerable time.† Another advances the hypothesis, that it is owing to paralysis of a particular set of muscles—namely, those which open the glottis, while the muscles which shut the glottis not being antagonized, the closure is in this manner produced, and that this paralysis is occasioned by the pressure of swelled lymphatic glands upon the recurrent laryngeal branch of the par vagum.‡

Let us, then, consider these theories in detail,

* Clark's Commentaries, p. 90. *Pretty, Med. and Phys. Journal*, vol. iv. p. 9.

† Marsh, *Dublin Hospital Reports*, vol. v. p. 616.

‡ Ley, p. 113.

of which the principal are those of Clark and Pretty, and that of Dr Hugh Ley.

Dr John Clark, in his Commentaries on the diseases of children, gives an accurate description of the *Laryngismus Stridulus*, under the title of "a peculiar species of convulsion in infant children." He remarks that, after a long and very attentive consideration of this disease, he has been led to conclude, "that in every case of convulsion, (be the remote cause what it may,) the brain is at the time organically affected, either directly or indirectly,—directly, when the convulsion arises from phrenitis, hydrocephalus, or on the sudden retiring of cutaneous eruptions, or of inflammation of the mucous membranes of the eyelids and eyes, or when they appear on the accession of some cutaneous disease attended with febrile symptoms, especially scarlet fever, small pox, and sometimes (although less frequently) of measles ; indirectly, by peripneumony, by inflammation, or suppuration in the cavity of the pericardium, by glandular or other humours pressing on the large vessels leading to the lower extremities, or when they take place in the progress of infantile fever or marasmus."

He then goes on to shew that convulsions may be caused by disease of the brain, and cites two cases which were accompanied by the peculiar

crowing inspiration already described, where disease of the brain was found on examination after death.

Since Dr Clark promulgated his views on this subject, a number of writers have espoused them ; and, among the rest, Mr Pretty, who appears to have been so thoroughly convinced of their truth, as to notice the disease under the denomination of *cerebral croup*. Several of this gentleman's children were affected with the disorder, and one of them died of it, in whom, on *post mortem* examination, the blood-vessels of the brain were found unusually loaded, and effusion had taken place into the ventricles and between the arachnoid and pia mater. "Upwards of a dozen cases," says this writer, "have been under my care, independent of the experience I have had under my own roof ; and in all I have seen such powerful reasons for believing the affection to be occasioned by cerebral irritation, that I do not hesitate to give it as my opinion, that, in by far the majority of cases, the encephalon was the seat of the complaint ; and although the cutting of a tooth, or the irritation arising from disordered bowels, may occasionally prove the exciting cause, that it mainly depends upon something wrong within the head."

With regard to the foregoing opinion of Dr Clark

and his followers, we have to remark, that, in the majority of cases brought forward even by these gentlemen themselves, the crowing inspiration is allowed to have preceded the convulsions and the other head symptoms, and, in many instances, for a very considerable time before their appearance. Now, it appears to us very clear, that in the instances in which this occurred, the impediment to the respiration may have occasioned a congestion of the blood in the vessels of the brain, thus making the cerebral disease not the *cause* but the *effect* of the crowing inspiration. The two cases recorded by Dr Clark in his Commentaries* are of the above nature, and also many of those related by Mr Pretty.† It has been also remarked, that when death has resulted from chronic laryngitis, œdema glottidis, and the like, by the long continued impediment to the respiration, serous effusion into the ventricles and between the arachnoid and pia mater, with other morbid appearances in the brain, are frequently found. But it cannot be denied that there are some cases on record, in which the existence of cerebral disease was distinctly manifested *before* the occurrence of the croupy inspiration. Mr

* Clark's Commentaries, pp. 95 and 96.

† Pretty on Croup; London Medical and Physical Journal, p. 13, vol. lv.

Ryland, surgeon to the Birmingham Infirmary, in his treatise on laryngeal affections, lately published, mentions one of this description. "The patient, a boy aged three years, had been much reduced by long continued diarrhæa, when he was attacked with symptoms of meningeal inflammation, pain in the head, delirium, and quick pulse. Leeches were applied to the temples, and cold applications to the head generally; and on the following day he was much relieved. On the third day, there were symptoms of effusion within the cranium, such as drowsiness, slow pulse, and vomiting, succeeded by general convulsions. Fifth day, great restlessness, constant but unavailing attempts to swallow, every thing returned through the nostrils. The respiration is quickened, and during inspiration the larynx is much drawn down, and a croupy noise always accompanies the act; no cough; voice natural; countenance very anxious. The patient fell into coma, and died during the night. Dissection: There were no morbid appearances about the fauces, larynx, or pharynx. The sinuses of the head and the meningeal veins were greatly distended. The convolutions of the brain were flattened, and the external membranes rather dry. All the ventricles were distended to the utmost by a clear fluid; septum lucidum very soft, almost

creamy; the fourth ventricle was immensely distended, more so than ever I saw it. The other organs of the body were free from disease, with the exception of the lungs, which contained a large number of miliary tubercles.”* Dr Henry Davies, in the eighteenth number of the London Medical Repository,† also records a case, where the head symptoms preceded the crowing inspiration. The brain in this case was found softer than natural, and the lateral ventricles distended with fluid. In the right lateral ventricle, the corpus striatum was somewhat prominent; the surface granulated, and of caseous nature, to about the size of a walnut. The thoracic viscera were found healthy, with the exception of the thymus gland, which, Dr Davies remarks, was larger than he ever remembered seeing it, but of a perfectly natural structure.

By these cases, therefore, and others which might have been cited, did our space allow of it, it is put beyond all doubt that the disease within the cranium may sometimes, at least, precede the laryngeal affection. But a question here arises, which has been ably considered by Dr Ley, Are we to conclude that the laryngeal affection follows as a direct consequence of the disease in the brain? Dr Ley contends, that although the

* Ryland on Diseases of the Larynx, p. 181.

† London Medical Repository, vol. xviii. p. 115.

laryngismus may sometimes arise from this cause, it is not the direct consequence of it; and, after a long and able train of argument, he arrives at the following conclusions:—That the head affection may be prior, and produce, by remote and indirect consequence, the laryngeal affection. That they may occur together as mere coincidences, without any other association than the existence of a constitutional malady, which may be the common cause of both. That the cerebral disturbance, again, may be the consequence of the frequent attacks of breathlessness, almost amounting to asphyxia, which, by impeding the flow of blood through the lungs, causes accumulation within the cavities of the heart, and subsequently venous congestion within the cranium; and this may be followed by effusion of serum into the ventricles or between the membranes of the brain, and occasionally and remotely by inflammation and its ordinary consequences.*

To the first and last of these conclusions we have no remark to offer, farther than has already been done. But powerful as are the arguments of Dr Ley, they are not sufficient to convince us of the accuracy of the second; for although it is within the range of possibility that these affections may be coincident in some cases, we have good

* Ley on the Laryngismus Stridulus, p. 81.

grounds for pausing before we decide that cerebral irritation never is the direct cause.

Dr Ley appears to come to the above mentioned conclusion on the following grounds :—In the first place, he considers the direct cause to be a paralysis of the opening muscles of the glottis, occasioned by the pressure of swelled bronchial or cervical glands, (an opinion upon which we shall enter more fully afterwards.) It is therefore evident, that if we take this view, any cause which may give rise to the tumefaction of these glands, such as dentition, &c. may be considered as the indirect cause of the disease. This being the case, which in many instances cannot be doubted, Dr Ley asserts, on the authority of Cruickshanks, that not only do the above causes give rise to enlarged glands, but that affections of the brain and its coverings do so likewise. Thus, he argues that the cerebral disease is the indirect, not the direct cause, by occasioning first enlargement of the cervical glands, which again, by pressing upon the recurrent nerves, produce the Laryngismus Stridulus. But although this may be a very ingenious mode of explaining the connection between these affections, to favour Dr Ley's view of the case, yet, until it has been distinctly and satisfactorily proved, we hold that there is a much easier and more ready mode of explaining it.

We have good grounds for believing that any cause affecting the muscles of the glottis through the medium of its nerves, may be the occasion of the Laryngismus. And we would ask, is it not highly probable, from the very circumstance of the origin of the nerves supplying the muscles belonging to the glottis being in the brain, that lesion or disease *within* the cranium, especially such a lesion or disease as would implicate the origin of the above nerves, should sometimes be the cause of this affection? We know, for instance, that the other muscles of the body are frequently affected from disease in the brain, as well as from lesion or disease of the nerves supplying those muscles in any part of their course. Strabismus is often produced from a deranged action in the muscles of the eyeball, consequent upon cerebral disease. Distortion of the features is likewise frequently produced from the same cause. Is it not, then, extremely probable, that a deranged action of the muscles of the glottis may take place from a similar cause also?

Again, Dr Ley is of opinion, that tumefaction of the cervical and bronchial glands is the cause of the disease. We would ask, Is it a perfectly ascertained fact, that in all cases of the crowing inspiration tumefied glands were present? Dr Ley himself concedes the possibility of the occurrence

of the disease in the absence of swelled glands, although he adds, however, that "it is a very rare occurrence."* In Mr Ryland's case, which we have quoted above, no mention is made of their existence; and in that also of Dr Henry Davies, neither the cervical nor bronchial glands are observed as being diseased. We again assert, then, that it still remains to be proved, that, in all cases of Laryngismus, swelled glands are present; and, until this has been done, we are entitled to conclude, that, in those cases of this complaint in which cerebral disease is first distinctly manifested, such cerebral disease must be considered as the direct cause.

Dr Ley remarks, that extensive, even fatal, meningitis, inflammation of the cerebral substance going on to suppuration, or *ramollissement*, and even suppurative inflammation of the medulla oblongata itself, from which the laryngeal nerves through the pneumogastrics derive their origin, may occur without producing a single symptom referable to the condition of the glottis. But to this it may be observed, that it is equally true, that a particular lesion of the brain does not in every case give rise to the same symptoms, and that, while a very extensive disease may exist in the brain with no very well marked indication of

* Ley, p. 137.

it, a very trifling one may be the cause of the most violent head symptoms. We must not therefore conclude, that, because in some instances a particular cerebral lesion may exist without a particular train of symptoms, therefore these symptoms are never produced by that particular lesion.

Let us now turn to the consideration of the theory promulgated by Dr Ley, to which we have already repeatedly alluded. His opinion is simply the following: That the Laryngismus Stridulus is dependent on a paralytic state of the muscles which open the glottis, produced by *pressure* of enlarged bronchial or cervical glands upon the recurrent laryngeal branch of the par vagum in some part of its course. As this theory is founded principally upon the physiological hypothesis of Magendie, supported by the experiments of Le Gallois, let us, in the first place, before proceeding farther, inquire into the truth of its fundamental doctrines. Magendie, in his Physiology, says, "The recurrent nerve is distributed to the posterior crico arytenoid, to the lateral crico arytenoid, and thyro-arytenoid; none of the ramifications of this nerve go to the arytenoid or to the crico-thyroid muscles. On the contrary, the superior nerve of the larynx goes to the arytenoid muscle, which it provides with a

considerable branch; and to the crico-thyroid it gives a small filament more remarkable for the distance it proceeds than for its size.”* M. Cloquet, in his “*Traité d’Anatomie Descriptive*,” also affirms, that the recurrent supplies the above mentioned muscles, and adds, “*Les autres muscles du larynx n’en recoivent aucun.*”† On the other hand, Andersch, Bichat, Meckel, Rudolphi, Bischoff, Swan, and Cruveilhier, as confidently assert, that the recurrent gives a twig to the arytenoid muscle. Also Dr John Reid, in a paper lately published in the *Edinburgh Medical and Surgical Journal*, says, “I have repeatedly satisfied myself of the existence of this arytenoid branch, and the dissection is one which can leave no doubt on the matter.”‡ He farther adds in a foot-note, “Dr Sharpey informs me, that he has been accustomed to describe this branch in his lectures.”

Upon such high authorities, then, we can have little difficulty in rejecting the opinion of Magendie; but, although it must be allowed that the anatomical distribution of a nerve may tell to a certain extent its physiological use, yet it must be also evident, that this of itself is not sufficient to put the matter beyond all doubt. To settle this

* Milligan’s Translation of Magendie, p. 132.

† *Traité d’Anatomie Descriptive*, tome ii. p. 132.

‡ *Edinburgh Medical and Surgical Journal*, No. 134, p. 30.

point, then, recourse has been had to experiments on the lower animals. Le Gallois performed experiments on the laryngeal nerves, and conceived that he had distinctly proved that the recurrent is the nerve of the opening muscles of the glottis, while the superior laryngeal is that of the closing muscles. The experiments of Dr John Reid, however, in the paper already referred to, appear to us completely to disprove this hypothesis, and seem to have been conducted in such a manner as apparently to preclude the possibility of fallacy.

The following is an abstract of the most important. The larynx was exposed, and the glottis brought into view, in a dog which was poisoned with prussic acid. On applying the galvanic wires to each recurrent nerve alternately, violent movements of the muscles of the larynx followed, and the arytenoid cartilages were first seen to approach one another, and then to recede. On galvanizing the superior laryngeal nerves, or rather the internal branches of these, no movement was observed. On again applying the wires to the recurrences, or to the trunk of the *par vagum* above their origin, the same results were obtained as before.* In another experiment, all the four laryngeal

* Edinburgh Medical and Surgical Journal, No. 134, p. 30.

nerves were exposed in a full grown cat. The larynx was then dissected out, by cutting between the hyoid bone and thyroid cartilage, and drawn forward so as to expose the glottis without disturbing the nerves. A small opening was made into the trachea, and a silver probe passed upwards. This appeared to excite little if any uneasiness until it arrived at the larynx, when it was instantly followed by close approximation of the glottis, violent cough, and evident uneasiness. The same effect was produced by passing the probe from above. One recurrent was cut across, with the effect of diminishing the movements of the arytenoid cartilage on the side cut. The other recurrent was then divided, *and instantly all movements of the muscles of the glottis ceased.*

The larynx was brought into view in a cat, as in the preceding experiment, and the various movements of the muscles of the glottis again watched for some time. The superior laryngeal nerves were then cut, without diminishing in the least any of the movements of the arytenoid cartilages. The sides of the superior aperture were approximated in crying, so as to form but a narrow fissure; and in struggling, the aperture became completely closed, as when the superior laryngeal nerves were uninjured. These experiments, then, appear to us quite decisive, in over-

turning the opinion of Magendie to which we have alluded. The theory of Dr Ley must, therefore, be considered incorrect to a certain extent. But allowing that the disease cannot be owing to the paralysis of the opening muscles of the glottis, while those which shut the glottis remain in action, we have yet to consider whether the disease may not be occasioned by the pressure of enlarged glands on the recurrent laryngeal; as all experimenters are agreed, that irritation, or section of these nerves, causes derangement and total cessation of the movements of the glottis, terminating ultimately in death, which takes place sooner or later, according to the age of the animal; young animals dying much sooner than those which are more mature. It is now quite ascertained, that the pressure of tumours, such as enlarged glands, aneurisms, exostoses, and the like, upon nerves with which they may be in proximity, is frequently followed by paralysis, or suspended function of the part to which these nerves are distributed; in proof of which, many cases related by Sir Charles Bell and Mr Swan might be adduced. Considering this, then, as a fact, which few will be inclined to question, we shall now proceed to detail shortly, some of the cases upon which Dr Ley founds his opinions.

The following is the description of the *post*

mortem examination of a patient who died during a paroxysm of the Laryngismus. “ No unusual congestion of the vessels of the meninges, or those in the substance of the brain. The ventricles contained no fluid, and the brain was of the usual firmness. After removing the integuments from the front of the neck, the glandulæ concatenatæ could be felt enlarged; some of them appearing of the size of pease. The muscles being removed, and the *par vagum* traced from the top of the larynx to where it gives off the recurrent on both sides, three or four glands as large as pease were found upon, and at the side of the recurrent, where it passes over the bronchi just after their division from the trachea. On the right side, the angle formed by the arteria innominata and subclavian artery was occupied by a gland; another behind the innominata, was equal in size to a large almond, over which both the recurrent and *par vagum* passed, and a whole chain of smaller glands accompanied the recurrent in its course by the side of the trachea, covering and obscuring the lateral filaments which proceed to the back of that canal.” *

Another case of a similar description is communicated by Mr Elwyn to Dr Ley.

* Ley, p. 140.

The child, aged nine months, was suddenly attacked with the disease, and, after labouring under it for the space of three months, died, and the following were the appearances on dissection. "The submaxillary, parotid, sublingual, and, indeed, almost all the glands throughout the body, were not only enlarged, but even apparently increased in number. The mesenteric particularly were diseased. The bronchial glands upon the right side surrounded the recurrent nerve, which was completely imbedded in a cluster of enlarged glands. On the left side there was to be seen but one ; and that one not large. It was about the size of a pea, very hard, and seemed to press upon the nerve, squeezing it, as it were, against the trachea. The nerve in its course was accompanied by other glands."* Dr Ley also relates cases of the Laryngismus, where diseased glands could be felt under the integuments along the course of the *par vagum* and its recurrent branch. In those cases, likewise, in which the disease terminated favourably, it was observed to decline on the subsidence of these enlarged glands. When we take all these facts into consideration, we must come to the conclusion, that in *some* cases, at least, pressure upon

* Ley, p. 40.

the recurrent laryngeal by swelled glands may be the cause of the *Laryngismus Stridulus*, although the universal dependence of the disease upon that is far from being proved.

Dr Marshall Hall objects to the theory promulgated by Dr Ley on several grounds, of which the following are the principal. He observes, that pressure on the nerve would produce simple paralysis. "This would," says he, "in the first place, affect the recurrent nerve, and the dilator muscles or the larynx; it would induce a partial but constant closure of that orifice,—a permanent state of dyspnœa, such as occurred in the experiments of Legallois, or such as is observed to be excited in horses affected with 'cornage,' or roaring, as described by M. Depuis."* He objects to it because affections of the glottis are frequently attended by truly spasmodic affections, as strabismus, corpo-pedal contractions, and the like. And he conceives that if the disease were the consequence of swelled glands, it would be less curable, less variable, and less suddenly fatal. Mr Ryland attempts to explain the first objection by bringing forward the well known fact, that in cases of paralysis of the muscles of the face, from pressure of an enlarged gland or tumour upon the

* Marshall Hall on the Nervous System, p. 76.

portio dura, the position of the mouth, under ordinary circumstances, remains neutral; but on the patient being excited, laughing, or attempting to speak, the distortion of the mouth and face, from the paralytic condition of the muscles on one side, becomes evident. And he suggests the probability of the same thing taking place with regard to the glottis, a fit coming on with any excitement, such as fright, anger, &c.* But we would ask, Are not the cases brought forward by Dr Ley (where no other cause but swelled glands could be assigned for the occurrence of the disease) a sufficient answer to the objection of Dr Hall? The second objection we do not consider one at all, in the view we take of the matter, all that we contend for being, that in some instances of this disease the symptoms are dependent on pressure of swelled glands upon the recurrent Laryngeal. However, it appears to us a very sufficient objection to the opinion of the universal dependence of the complaint on this cause. To the third objection we would remark, that if the tumefaction is slight, the disease, in like manner, will be slight also; and as has been shewn in some cases brought forward by Dr Ley, that on the disappearance of the glandular swellings, the disease also will subside.

* Ryland on Diseases of the Larynx.

On the other hand, should the tumefaction prove obstinate, the disease will prove obstinate likewise.

A disease similar, if not identical with the Laryngismus Stridulus, has lately been described by Drs Kopp and Hirsh, and Dr Montgomery of Dublin, under the title of thymic asthma. Mr Hood of Kilmarnock has also related several cases. It remains to be ascertained, in what way the enlargement of the thymus gland gives rise to this disease. Kopp has given it as his opinion, that it is from the direct pressure upon the trachea, while others conceive that the pressure on the large vessels and nerves in the vicinity is the cause. But it appears not an unreasonable opinion, that it may be occasioned either by the direct pressure upon the *par vagum* or its recurrent, or by the same effect being produced by the coincident tumefaction of the cervical or bronchial glands. In one of Mr Hood's cases, the bronchial glands are mentioned as being enlarged, and in a number of them the mesenteric were so, shewing a strong tendency to this morbid change in the absorbent system, and which might frequently have escaped observation in the cervical and bronchial glands. But the truth of this opinion remains to be verified by future dissections; for none of the writers on this affection seem to have examined minutely the

state of these nerves, although some of them mention in general terms, that the pressure upon the great nerves in the vicinity may be one cause of the complaint.

In the foregoing pages, we have been considering whether the Laryngismus may not depend upon a lesion of the recurrent branch of the par vagum, but may it not in some cases be caused by disease of the par vagum itself? Dr Marsh, in a paper in the Dublin Hospital Reports, suggests the probability of this being a cause of the disease; and the following two cases leave hardly any reason to doubt that in some instances it is so. The first case is recorded in Dr Monro's *Morbid Anatomy of the Brain*. The patient, a child, was affected with acute hydrocephalus, and during the course of the disease, had violent croup-like inspiration. Upon inspection after death, besides other evidences of cerebral disease, the origins of the fifth and eighth pair of nerves were of a deep scarlet colour, and covered with turgid vessels, and the eighth was of a deep red colour along its whole track. It was also remarked, that on removing the brain, by cutting through the medulla oblongata, a considerable quantity of serum rushed from the upper part of the canal. Stronger evidence could hardly be adduced. But we have even a still more conclusive case recorded by Dr Ley

himself. "I have," says he, "in my own possession, a preparation presented to me by Mr Fowler, my former pupil, now a respectable practitioner at Turnham Green, in which, accompanying the crowing inspiration, after a long continuance of which the child died, a small tubercle, the only change cognizable to the senses, somewhat larger than a coriander seed, or a single grain of pearl barley, was found attached to and forming part of one of the minute nervous threads proceeding from the medulla oblongata to form the eighth pair."

Before bringing this paper to a conclusion, we have still shortly to allude to an opinion lately given by Dr Marshall Hall, in his lectures on the nervous system. After discussing individually the several preceding theories, he says,—“I venture to suggest another view of this matter, as nearer the truth; namely—that this disease is induced through the fifth pair in teething, the pneumogastric in indigestion, and the spinal nerves in constipation, as parts of the excito-motory system.”* Upon the consideration of this ingenious hypothesis, we do not intend to enter at length, as it would involve us in the discussion of a physiological point, foreign to the subject of this paper. But even admitting the accuracy of the

* Hall on the Nervous System, p. 78.

physiological doctrine alluded to, we would only refer to the recorded cases of this disease to prove, that it derives its origin from other causes besides those mentioned by Dr Hall.

Having now examined in detail all the opinions which have been advanced concerning the Pathology of the *Laryngismus Stridulus*, it only remains for us to come to some conclusion regarding it. And we appeal to the facts brought forward in the foregoing pages, if we are not fully justified in arriving at the following :—

That all the exclusive theories which have been advanced regarding the pathology of this disease are incorrect ; and that it is evidently occasioned by any cause which may derange the muscular apparatus of the glottis through the medium of its nerves ; that cause in some instances being cerebral irritation, and in others, disease of the nerves distributed to the larynx, either at their origin in the brain, or in any part of their course, or lesion of them occasioned by the pressure of enlarged glands.

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